15 May 2008

M E M O R A N D U M

TO: David Anderson, P.E.
Twin Falls Regional Office

FROM: Jessica Moore, Analyst 2
Technical Services

SUBJECT: The City of Richfield Wastewater Reuse Permit Application Review -- LA-000048-03 (Municipal Wastewater Facility)

1.0 Purpose

The purpose of this memorandum is to satisfy the requirements of IDAPA 58.01.17.400 (Rules for the Reclamation and Reuse of Municipal and Industrial Wastewater) for issuing wastewater reuse permits. It states the principal facts and significant questions considered in preparing the draft permit conditions or intent to deny, and a summary of the basis for approval or denial with references to applicable requirements and supporting materials.

2.0 Process Description

The City of Richfield operates a wastewater reuse site for the application of treated effluent to non-edible crops located approximately .19 miles southwest of the City limits, south of U.S. Highway 26, near the Little Wood River. This particular wastewater treatment facility and accompanying land application operation receives influent from household and small municipal sources in the City of Richfield. The City owns the 3.5 acre wastewater reuse site and adjoining wastewater treatment facilities as well as land east of the site which is not currently used for any designated purposes and land north of the site which is used as horse racing and rodeo grounds. The wastewater reuse site is employed for slow rate land application. The Little Wood River is 100 feet to the south of the land application field; however, a cut-off loop of the river with standing water in it is less than 50 feet from the field.

During the growing season, the City applies an average of 4.794 million gallons (MG) to the site (City of Richfield, 2004-2006). The site has a treatment facility consisting of two treatment lagoons and a chlorine contact basin used to disinfect the wastewater to the permit-required 230 coliform forming units/100 milliliters (CFU/100 ml). Wastewater flows first into the aerated lagoon then into the facultative polishing lagoon where it is treated further and held prior to disinfection and land application. The aeration lagoon is 1.0 million gallons (MG) and is bentonite lined. The facultative polishing lagoon is 0.9 million gallons (MG) and is bentonite lined. From November 1 to April 30 of each year, the wastewater is discharged to the Little Wood River. A National Pollutant Discharge Elimination System (NPDES) permit regulates the discharge to the river (City of Richfield, 2007).

3.0 Summary of Events

The City of Richfield submitted its first wastewater reuse application in December of 1988 and received the subsequent permit (LA-000048-01) on February 28, 1989. This permit allowed for the application of up to 21.9 MG on 3.5 acres and expired on January 31, 1994. On July 31, 1996, the Department received a wastewater reuse re-permit application. The corresponding permit, LA-000048-02, was issued on May 30, 2002 and expired on May 30, 2007. A permit renewal application was submitted in May of 2007. During the interim period City of Richfield has continued to operate under LA-00048-02.

During the last re-permit process City of Richfield also possessed an EPA National Pollutant Discharge Elimination System (NPDES) discharge permit (ID-002121-1) for the site which was issued on April 1, 2005. It allows for the discharge of treated effluent into the Little Wood River. This permit will expire on March 31, 2010. (EPA, 2005)

4.0 Discussion

The following is a discussion of: soils, ground water, surface water, hydraulic management unit configuration, wastewater flows and constituent loading, site management, and compliance activities. Conclusions and recommendations are summarized in Section 5 below.

4.1 Soils

The Natural Resources Conservation Service (NCRS) has characterized the area, listing the principal soils for the site as being comprised of a Burch-Quencheroo-Dryck complex (0-2 percent slopes). Burch loam is derived mainly of alluvium generated from sandstone and contains a restrictive root layer which is greater than 60 inches. Quencheroo loam is formed in alluvium and has a restrictive root layer which is approximately 40 to 60 inches. Dryck loam is composed of mixed alluvium, with depth to the restrictive root layer greater than 60 inches. All of the soils on both sites are characterized as well-drained. Burch and Quencheroo are characterized as having moderate and moderately slow permeability while Dryck has moderate or moderately rapid permeability to a depth of 23 inches with the permeability below that being very rapid (NCRS, 2007).

In addition to this characterization, soils on the site were sampled by the City as part of the current wastewater reuse permit. Composite soil samples were taken at depths of 1 to 12 inches, 12 to 24 inches and 24 to 36 inches at the reuse site during the spring and fall.

The constituent concentrations in the soil at the site range from low to very high. Nitrate concentrations have been at the moderate to high range, with average concentrations between 9.5 ppm to 16 ppm from 2004 to 2006 at the site. Phosphorus concentrations have ranged from low to very high with average concentrations between 15 ppm to 29 ppm from 2004 to 2006 at the site.

When this site was last re-permitted there had been no soil analysis requested in the previous permit and consequently there was no data available for evaluation of the soil's efficiency to

treat the City of Richfield's wastewater (DEQ, 2002, Staff Analysis). During the course of the last permit cycle the facility has been sampling for the sodium absorption ratio (SAR) in order to provide information on the comparative amounts of sodium, calcium, and magnesium in the soil. The average SAR for the site from 2004-2006 was between 3.3 and 3.7, which would be considered acceptable (DEQ, 2005).

4.2 Ground Water

According to the Wastewater Land Application permit renewal document, submitted May 22, 2007, the wastewater reuse site lies over the western portion of the Eastern Snake River Plain Aquifer (ESPA). The groundwater flow direction is towards the southwest. The City currently has six shallow groundwater monitor wells with depths varying from 10 to 13 feet. As part of Compliance Activity CA-048-03 in the existing permit, five test pits were dug and the depth of topsoil above the basalt at the site ranged from 2.7 to 8.0 feet.

Pump testing of monitor wells #4 and #6 was done in April 2003 and indicated that the presence of a shallow perched aquifer beneath the reuse site is not likely or of a very limited extent. The ESPA was determined to be the uppermost aquifer beneath the site and the City's municipal well logs show that the depth to the ESPA is approximately 320 to 350 feet below ground surface. Consequently, the existing monitor wells may not be suitable for monitoring the ground water quality near the reuse site. Water quality samples were collected from monitor well #6, but these samples are likely not representative of the groundwater quality of the ESPA. The data is more likely to be representative of treated wastewater that has percolated through the soil and collected in the monitor wells which are likely acting as sumps in the shallow basalt (City of Richfield, 2007).

The City is proposing a new groundwater monitor well network which includes a city well located upstream of the reuse site and a domestic well located approximately 2 miles downstream of the reuse site. The proposed city well to be used may not provide relevant data other than background groundwater quality as the well is upstream of the reuse site and the regional groundwater flow moves away from the reuse site in the opposite direction of the city well. The domestic well would not be an adequate indicator of groundwater quality in the vicinity of the reuse site due to its greater distance from the site. Impacts the site could potentially have on groundwater would not be detected in a reasonable amount of time if this domestic well is used.

The only groundwater monitoring data from the site that is available for analysis is from Well #6 in the years 2004 through 2006 and, as stated above, this data is likely not representative of the groundwater's characteristics in the vicinity of the site, but rather treated wastewater that has percolated through the soil and into the well. The measured total dissolved solids (TDS) for Well #6 is under the Ground Water Quality Standard (IDAPA 58.01.11.200.01.b) for TDS of 500 mg/L in all of the sampling events. Well #6 has been almost universally in exceedence of the secondary constituent standards (IDAPA 58.01.11.200.01.b) for both iron and manganese. There are, however, no up-gradient wells with water in them and no data that was taken from any other well to compare with the data from Well #6.

Based on conversations with the IDEQ Technical Services senior hydrogeologist, staff recommends that no groundwater monitoring be required and that the City not pursue the establishment of a new monitoring well network. It is not expected that the site will have significant groundwater impacts so a well network is not necessary at this time.

4.2.1 Municipal and Domestic Wells in Proximity to the Facility

The closest private well to the reuse site is over half a mile or about 3,100 feet northwest from the site. The closest municipal well is over a quarter mile or about 1,700 feet northeast of the site (City of Richfield, 2007).

4.3 Surface Water

The nearest surface waters to the site are a small irrigation ditch to the east and southeast of the site and the Little Wood River to the south of the site. The City states that the nearest distance from the reuse site to the irrigation ditch is approximately 35 feet and that the nearest distance to the main channel of the Little Wood River is approximately 100 feet. There is, however, a loop of the river which was cut off during a flooding event and which was observed to have standing water in it during a site inspection on August 2, 2007. The distance from this loop to the reuse site was measured in two places and found to be approximately 34 feet and 41 feet in those spots. The required buffer zone to surface waters is 50 feet. Staff recommends a two to three foot high berm be installed to prevent potential runoff from the site reaching the cut off loop of the river and the portion of the irrigation ditch which is closer than 50 feet to the site. Following installation of the berm, the required buffer zone for the cutoff loop of the river and the nearer portion of the irrigation ditch should be changed from 50 to 35 feet. This mitigation measure will allow the City to meet permit requirements.

There is a landscape feature on the south side of the reuse site which the City refers to as a run-off detention pond. It is an unlined, natural dip in the ground that may not be suitable for holding wastewater runoff. Staff recommends that the City prepare and submit a new Runoff Management Plan that will take into consideration the berm to be installed and the landscape feature being used as a runoff detention pond.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) portions of the southwest corner of the reuse site are located within the 100 and 500 year flood plains. The land feature the City refers to as the run-off detention pond is located within the 100 year flood plain and was impacted during a flood in 1992. The City is proposing to construct a berm approximately 2 to 3 feet in height around the southern portion of the reuse site to minimize the potential for flooding. Staff recommends that the City follow through with the proposed plans to build a berm on the southern portion of the site and, as mentioned above, that the berm extend to cover the portion of the site that runs alongside the cut off loop of the Little Wood River and the portion of the irrigation ditch that is closer than 50 feet to the site.

Other surface water present in the area includes several wetlands within a one-quarter mile radius of the reuse site. The wetland designations include scrub-shrub (PSS), unconsolidated shore (PUS), aquatic bed (PAB), and unconsolidated bottom (PUB) palustrine wetlands.

4.4 Hydraulic Management Unit Configuration

As has been mentioned previously, the City of Richfield's reuse site consists of 3.5 acres used for land application. The City is proposing to add acreage to the land application site for future use. The current 3.5 acre reuse site is designated as a single management unit in the previous permit with a corresponding soil monitoring unit. The number of acres the City is proposing be added to the reuse site has not yet been determined. Staff recommends that plans for any additional acreage be submitted to DEQ as a modification to the permit as per IDAPA 58.01.17.700.02 before wastewater is applied to the new acreage.

No immediate changes have been proposed to the current hydraulic management units, so staff recommends that unit designations remain the same as those in LA-000048-02.

4.5 Wastewater Flows and Constituent Loading Rates

Trending of wastewater flow rates and rationale for constituent and hydraulic loading rates appearing in the draft permit are discussed below.

4.5.1 Wastewater Flows

Currently, the City of Richfield wastewater system serves the city's domestic households and small commercial developments with an estimated influent value of approximately 34,000 gallons per day (gpd). Influent is treated and then stored in either the 1.0 MG aerated lagoon or the 0.9 MG facultative polishing lagoon before disinfection and land application during the growing season (April 1 to October 31). During the non-growing season (November 1 to March 31), the City has an NPDES permit which allows for treated wastewater to be discharged to the Little Wood River.

From 2004 to 2006 the acreage utilized remained the same while the amount of wastewater applied to the site increased slightly in each consecutive year, with the site applying an average of 4.8 MG on 3.5 acres. Alfalfa is grown on the 3.5 acre reuse site and has an irrigation water requirement (IWR) of approximately 5.3 million gallons. Supplemental irrigation water is used to meet the crop IWR as necessary. Lagoon #1 at the site has an effective storage volume of .5 million gallons (50 percent of total volume) and Lagoon #2 has an effective storage volume of .72 million gallons (80 percent of total volume). The City is projecting that influent flows to the site will increase as a result of an annual population growth rate of 2 percent per year (City of Richfield, 2007). Due to this projected increase, the City is proposing that acreage be added to the reuse site to accommodate the increased wastewater flows. For a more detailed discussion of hydraulic loading rates please see Section 4.5.2.3.

4.5.2 Constituent Loading Rates

The sections below discuss proposed constituent loading rates, including nitrogen, total dissolved solids, hydraulic, chemical oxygen demand (COD), and phosphorus. Recommended loading rates for inclusion into the draft permit, Section F, are also discussed.

4.5.2.1 Nitrogen Management and Loading Rates

The City of Richfield's current Wastewater Reuse permit includes a nitrogen loading rate limit of 125% of typical crop uptake, and based upon historic loadings the facility is not likely to exceed this limit. Over the past permit cycle an average of 203 pounds per acre (lb/ac) of nitrogen was applied to the site. The facility typically grows alfalfa with an average yield of 4.62 tons/acre. Assuming a crop nitrogen uptake of 50 lb/ton for alfalfa hay, and given the facility's average yields, this gives an average crop nitrogen uptake of 231 lb/acre for the site. This indicates that with proper irrigation and crop management the facility should remain well below the 150% crop uptake loading rate recommended in the draft permit.

4.5.2.2 Total Dissolved Solids (TDS) Loading Rates

Total dissolved solids (TDS) loading rates from wastewater and irrigation water can have significant impacts to ground water TDS levels. Total dissolved solids measured in ground water are commonly inorganic constituents (salts); however, TDS in wastewater can include significant quantities of organic constituents in addition to salts. For modeling and other environmental evaluation purposes, it is important to measure inorganic wastewater TDS. The current permit requires measurement of both TDS and volatile dissolved solids (VDS), the latter being a rough estimate of organic constituents. The difference between TDS and VDS is termed non-volatile dissolved solids (NVDS) and can be used as a rough estimate of the salts in wastewater. From 2004 to 2006 TDS and VDS concentrations in the wastewater fluctuated somewhat with the average TDS concentration being approximately 476 milligrams per liter (mg/L) and the average VDS concentration being 138 mg/L. The minimum TDS concentration recorded was 380 mg/L and the maximum was 570 mg/L, while the minimum and maximum concentrations for VDS were 30 mg/L and 320 mg/L respectively.

As has been discussed previously, the groundwater monitoring wells for the site are typically dry, while the data available for well #6 is likely not representative of the groundwater quality. As discussed in Section 4.2, Staff recommends that the City no longer be required to perform groundwater monitoring and, as such, TDS and VDS only be measured in the effluent as a precaution.

4.5.2.3 Hydraulic Loading Rates

Permit LA-00048-02 gave the total maximum hydraulic loading limits as 5.53 MG per year for the site. The facility has been substantially below these limits for the majority of the permit cycle. In theory, growing season hydraulic loading should substantially be the irrigation water requirement (IWR) for the crop in question. Currently, the facility uses supplemental wastewater to meet the crop irrigation water requirement.

The USDA National Agricultural Statistics Service gives average crop yield for irrigated alfalfa hay in Lincoln county for 2004 and 2005 as 4.22 and 4.46 tons/ac respectively (USDA, 2008) whereas yields for 2004 and 2005 were 3.96 and 5.28 tons/ac at the site (City of Richfield, 2004; City of Richfield Renewal Application, 2007). Staff recommends that the IWR be calculated using 30 year average data for the area and that sufficient supplemental irrigation water continue

to be added to the wastewater to meet these requirements, thereby insuring sufficient nutrient uptake and crop yield.

4.5.2.4 COD Loading Rates

Wastewater Reuse permits typically include a chemical oxygen demand (COD) permit loading rate limit of 50 pounds/acre-day (lb/ac-day) per season. During the last permit cycle, in the years 2004 through 2006, an average of 13.1 lb/ac-day was applied at the site, with a minimum of 10.1 lb/ac-day in 2006 and a maximum of 16.3 lb/ac-day in 2005. In light of these historic loading rates it is unlikely that the facility will exceed the 50 lb/ac-day seasonal average and staff therefore recommends that the facility continue to be held to this standard.

4.5.2.5 Phosphorus Loading Rates

The phosphorus loading limit included in the current permit is set at up to 125% of typical crop uptake. From 2004 to 2006 total-phosphorus loading in the effluent remained relatively constant with the average loading being approximately 45.2 pounds per acre (lbs/acre), while the permitted phosphorus loading for the site is 30.1 lbs/acre. The phosphorus loading in the effluent has been consistently over the limit. With the new 150% of typical crop uptake requirement, the City should no longer exceed the limit. Ground water on the site flows from north-northeast to south-southwest, towards the Little Wood River; and a portion of the reuse site is located within its flood plain (See Section 4.3). There is the potential for phosphorus contamination to the Little Wood River. Given an adequately designed runoff plan, however, phosphorus contamination to the Little Wood River should not become a concern.

It is recommended that the facility use supplemental irrigation water as needed to meet crop IWR and to assure reduction of the phosphorus loading to the site. It is further recommended that the City follow through with proposed plans to expand the site acreage to accommodate larger wastewater flows and increased loadings. The City should also follow through with proposed plans to build a berm, as previously mentioned, on the southern boundary of the site to prevent run-off from reaching the waters of the Little Wood River.

4.7 Buffer Zones and Disinfection

The current permit, LA-00048-02, requires that the applied wastewater from the facility be disinfected such that the 30 day median coliform count does not exceed 230 colony forming units (cfu) per 100 mL and that 50 foot buffer zones be maintained from areas of public access and streams, 500 foot buffer zones be maintained from private water supply wells, and 1,000 foot buffer zones be maintained from public water supply wells.

In order for the facility to meet the current requirements (IDAPA 58.01.17.600.07.d) for Class D wastewater the effluent must not exceed a median of 230 cfu/100 mL, or 2,400 cfu/100 mL in any one confirmed sample, as determined from the bacteriological results of the last three days for which analyses were completed; and said analysis shall be based upon monthly sampling during periods of application. As has been previously mentioned, the facility disinfects their effluent via a minimum of 55 minutes in a chlorine contact chamber prior to land application.

The facility has had several instances from 2004 to 2007 where it has not met the level of disinfection required under LA-00048-02. In May and June 2004, there were two exceedences which were far over the limit, 13,000 and 30,000 CFU/100 mL respectively, and a near exceedence in October 2004 at 2,200 CFU/100 mL. In July 2007 there was an exceedence of 2,420 cfu/ 100 mL. Although, there were several instances of exceedences, the facility has experienced much fluctuation in its monthly total coliform counts with the lowest counts being less than 1 CFU/100 mL and the median value for the years 2004 through 2006 being 41 CFU/100 mL.

Existing buffer zones provided at the site do not meet the requirements for Class D wastewater application. No buffer zone is provided for public access where the distance should be 50 feet. Only 35 feet of buffer zone is provided from the site to the irrigation ditch and streams in the vicinity where 50 feet is required. The City is proposing to provide a 50 foot buffer area to public access by moving the existing fence and warning signs on the site. The City is asking as well that the required buffer zone to streams be decreased from 50 to 35 feet so that they can meet it. As discussed in Section 4.3, following installation of the berm, the buffer zones for the portions of the irrigation ditch and the cutoff loop of the river that cannot meet the 50 feet requirement shall be 35 feet.

Staff recommends that the facility continue to disinfect the wastewater to meet Class D requirements or better and that buffer distances be maintained according to the requirements. It is further recommended that the adequacy of the current disinfection system be evaluated to insure that further exceedences of the requirements for Class D wastewater do not occur. If the City is unable to meet Class D requirements and must apply Class E wastewater, the recommended buffer zones should not change and the proposed berm should resolve any issues with the potential for contamination of the river or irrigation ditch.

4.8 Plan of Operation and Other Compliance Activities

Section 6.1 of the Application states that an updated facility plan of operation was submitted on May 30, 2003 as part of a permit compliance condition (CA-048-01). DEQ provided a response letter dated June 13, 2003 indicating completion of the compliance condition. It is understood that a plan of operation is a living document and is modified as operations and regulatory requirements change.

Seepage rate testing was performed on the City's lagoons in March and April of 2004 as specified in CA-048-04. The average seepage rates were found to be 0.0772 and 0.0881 inches per day for Lagoons #1 and #2, respectively. The maximum allowable seepage rate is 0.125 inches per day. As the tested seepage rates are under the maximum allowable rate and there are no planned modifications to the lagoons, it is not necessary for the City to conduct seepage testing in the next permitting cycle.

As the City is proposing to add an unknown amount of acreage to the site's land application area, it is recommended that the City be required to submit an application for modification to the

permit prior to applying wastewater to the added acreage. For the full text of the condition, see Section E, CA-048-02.

In order to address the issues with the facility's wastewater disinfection system, it is recommended that the City of Richfield be required to submit a Disinfection Management Plan that defines the approach the facility will take to meet and/or exceed the permit standard of disinfection, either by more efficient management and utilization of the current system or, if necessary, improvement to the system itself. For the full text of the condition, see Section E, CA-048-03.

Due to changes proposed to be made to the site it is recommended that the City prepare and submit an updated Runoff Management Plan. Furthermore, the City is proposing that a 2 to 3 foot high berm be constructed around the southern boundary of the reuse site to minimize the potential for flooding from the Little Wood River. It is recommended that the berm extend to cover both the cutoff loop of the Little Wood River and the portion of the irrigation ditch that is closer than 50 feet to the site. For the full text of the condition, see Section E, CA-048-04.

5.0 Conclusion

The following recommendations fall into four major areas. They include surface water related recommendations, loading rate related recommendations, ground water related recommendations, and other recommendations.

5.1 Surface Water Related Recommendations

1. It is recommended that the City follow through with proposed plans to build a 2 to 3 foot high berm around the southern portion of the site and that the berm extends to cover the area of the site adjacent to the cut-off loop of the Little Wood River and the portion of the irrigation ditch that is less than 50 feet from the site as discussed in Section 4.3. See section E of the draft permit.

2. It is recommended that the City submit an updated Runoff Management Plan that takes into consideration the berm to be installed and the natural landscape feature currently being used as a runoff detention pond. See section E of the draft permit.

5.2 Loading Rate Related Recommendations

1. It is recommended that all hydraulic management units be managed and loaded hydraulically during the growing season as discussed in Section 4.5.2.3. See Section F of the draft permit.

2. COD loading rates should be no more than 50 lb/acre-day for growing season as discussed in Section 4.5.2.4. See Section F of the draft permit.

3. It is recommended that all management units have a nitrogen loading rate of 150% of typical crop uptake as discussed in Section 4.5.2.1. See Section F of the draft permit.

4. It is recommended that all management units have a phosphorous loading rate of 150% of typical crop uptake as discussed in Section 4.5.2.5. See Section F of the draft permit.

5.3 Ground Water Related Recommendations

It is recommended that the facility not be required to have a groundwater monitoring well network and that the facility not have to perform groundwater monitoring as discussed in Section 4.2. See Section G of the draft permit.

5.4 Other Recommendations

1. It is recommended that the City be required to submit to DEQ an application for modification to the permit concerning the addition of acreage to the reuse site prior to applying wastewater to the new acreage as discussed in section 4.4. See Section E of the draft permit.

2. It is recommended that all disinfection limits be met and buffer zones be maintained as discussed Section 4.7. See Section F of the draft permit.

3. It is recommended that the City evaluate the adequacy of the current disinfection system to avoid further exceedences of disinfection limits as discussed in Section 4.7 and 4.8. See Section E of the draft permit.

6.0 References Cited

Allen, Richard G and Clarence W. Robison. Evapotranspiration and Consumptive Irrigation Water Requirements for Idaho. Precipitation Deficit Table for Richfield. 2007. **http://www.kimberly.uidaho.edu/ETIdaho/**

Department of Environmental Quality, 2007, Guidance for Reclamation and Reuse of Municipal and Industrial Wastewater-Revised Section 2, April 2007

Department of Environmental Quality, 2005, Guidance for Reclamation and Reuse of Municipal and Industrial Wastewater, December 2005

Department of Environmental Quality, 2002, City of Richfield, Land Application Permit LA-000048-02 (Municipal Wastewater), May 2002.

Department of Environmental Quality, 2002, City of Richfield, Wastewater Land Application Permit Renewal Application Staff Analysis, April 2002.

Federal Emergency Management Agency, 1986, Flood Insurance Rate Map—Lincoln County, Idaho, February 1986.

City of Richfield, 2007, State of Idaho Renewal Application for Wastewater Land Application Permit, Richfield, Idaho, May 2007.

City of Richfield, 2007, Wastewater Reuse Annual Report 2007, January 2008.

City of Richfield, 2006, Wastewater Reuse Annual Report 2006, January 2007.

City of Richfield, 2004, Land Application Annual Report 2004, January 2005.

City of Richfield, 2003, Land Application Annual Report 2003, January 2004.

City of Richfield, 2002, Wastewater Reuse Annual Report 2002, February 2003.

National Resources Conservation Service, 2007, Soil Survey of Lincoln County Area, Idaho, February 2008.

United States Department of Agriculture—National Agriculture Statistics Service, 2007, Crop Yield for Irrigated Alfalfa Hay in Lincoln County, Idaho 2004-2005, February 2008.

United States Environmental Protection Agency, 2005, City of Richfield National Pollutant Discharge Elimination System Permit, Richfield, Idaho, April 2005.

Appendix 1

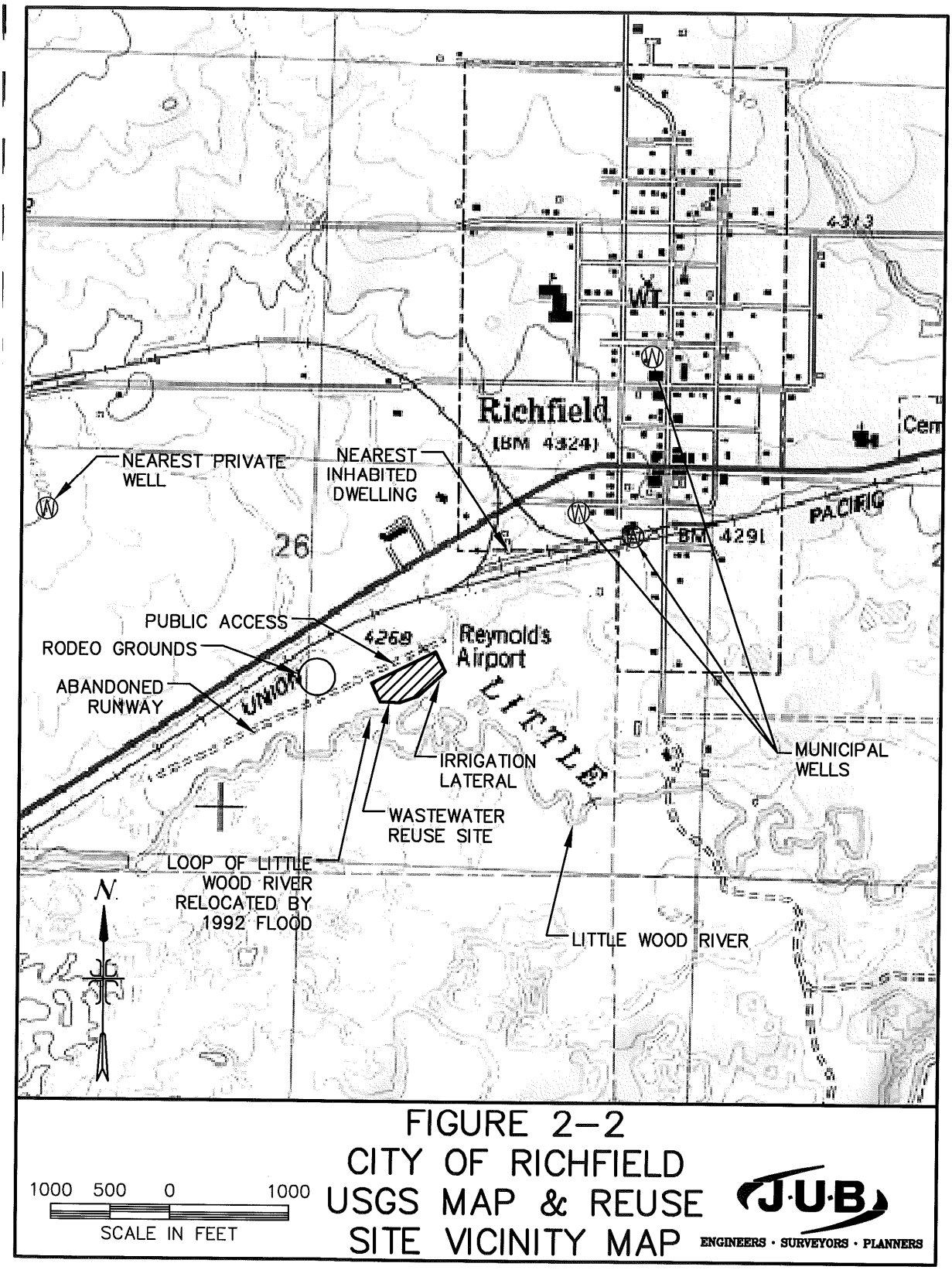

Figure 1. City of Richfield USGS Map & Reuse Site Vicinity Map